

What is claimed is:

1. A temperature control method of controlling a heating apparatus having at least two heating zones so as to adjust temperatures detected at predetermined locations to a target value therefor,

said method comprising:

detecting temperatures at said predetermined locations the number of which is larger than the number of said heating zones and at least one of which is in each of said heating zones; and

controlling said heating apparatus in such a manner that said target temperature falls between a maximum value and a minimum value of a plurality of temperatures detected at a plurality of detected predetermined locations.

2. The temperature control method according to claim 1,

wherein first temperature detectors are disposed at first predetermined locations corresponding to said respective zones, and are used for a temperature control method of controlling said heating apparatus in such a manner that temperatures detected by said first temperature detectors equal a first target temperature, and

wherein second temperature detectors are disposed at second predetermined locations which are closer to a treatment target than said first predetermined locations, to obtain an interference matrix  $M$  as well as differences  $P_0$  between a second target temperature for said second

temperature detectors and temperatures detected by said second temperature detectors, said interference matrix  $M$  being a matrix of coefficients indicative of the extents of variations of temperatures detected by said second temperature detectors when said first target temperature for said first temperature detectors is varied, and

wherein said first target temperature is corrected on the basis of said interference matrix  $M$  and said errors  $P_0$ .

3. The temperature control method according to claim 2, further comprising:

determining new errors  $P_0'$  by performing temperature control using said corrected first target temperature; and further correcting said corrected first target temperature using said new errors  $P_0'$  and said interference matrix  $M$ .

4. A temperature control method for controlling an apparatus which includes a process chamber, a heating apparatus having at least one heating zone for heating a treatment target provided in said process chamber, and first temperature detectors provided at least one for each zone for detecting heating temperatures provided by said heating apparatus at first predetermined locations,

wherein said heating apparatus is controlled on the basis of first detected temperatures detected by said first temperature detectors and a first target temperature for said first detected temperatures, and

wherein a plurality of second temperature detectors are disposed at second predetermined locations the number of which is larger than that of said heating zones and which are closer to said treatment target than said first predetermined locations, said second temperature detectors being operable to detect heating temperatures provided by said heating apparatus,

said method comprising:

comparing second detected temperatures detected by said second temperature detectors with a second target temperature for the second detected temperatures to obtain corrective values for said first target temperature; and

correcting said first target temperature by said corrective values to perform temperature control.

5. The temperature control method according to claim 4, wherein said corrective values are obtained before an actual process of actually treating a substrate to be treated.

6. A thermal treatment apparatus, comprising:

a process chamber;

a heating apparatus having at least two heating zones and being subjected to temperature control in such a manner that temperatures detected at predetermined locations equal a target temperature therefor;

a plurality of temperature detectors for detecting temperatures at predetermined locations the number of which

is larger than the number of said heating zones and at least one of which is in each of said heating zones; and

a control device for controlling said heating apparatus in such a manner that said target temperature falls between a maximum value and a minimum value of a plurality of temperatures detected by means of said plurality of temperature detectors.

7. A method of manufacturing a semiconductor device, in which a target substrate is subjected to a heating process by controlling a heating apparatus having at least two heating zones in such a manner that temperatures detected at predetermined locations equal a target temperature therefor,

said method comprising:

detecting temperatures at predetermined locations the number of which is larger than the number of said heating zones and at least one of which is in each of said heating zones; and

controlling said heating apparatus in such a manner that said target temperature falls between a maximum value and a minimum value of a plurality of temperatures detected at a plurality of detected predetermined locations.